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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/576,583

04/20/2006

Kiichi Shimodaira

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38834

7590

02/04/2009

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EXAMINER

PRINCE, KAJLI

ART UNIT

PAPER NUMBER

2874

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/576,583	<b>Applicant(s)</b> SHIMODAIRA ET AL.	
	<b>Examiner</b> KAJLI PRINCE	<b>Art Unit</b> 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/26/06, 4/20/06</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. §119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The prior art documents submitted by applicant in the Information Disclosure Statement filed on 26 September 2006 and 20 April 2006 have all been considered and made of record (note the attached copy of form PTO-1449).

### ***Drawings***

One (1) sheet of formal drawings was filed on 20 April 2006 and has been accepted by the Examiner.

### ***Specification***

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2874

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumitomo Bakelite Co., Ltd. (JP 2003-033991) in view of Matsushita Electric Industrial Co., Ltd. (JP 2002-365624).**

As to claims 1-8; Sumitomo Bakelite Co., Ltd. (Sumitomo) substantially discloses a plastic substrate for a liquid crystal display device (paragraph 19) having a layer formed of glass cloth impregnated with an epoxy resin (Title, Abstract, paragraphs 3,4 and 7-9), as well as the feature of performing a gas-barrier process or a hard-coat process (paragraph 15). Sumitomo

Art Unit: 2874

teaches using several common resins to fabricate an LCD substrate in order to the elastic modulus, for the benefit of low average coefficient of linear expansion and high bending strength (paragraph 9). However, Sumitomo fails to specifically teach the claimed elastic modulus ratio.

Matsushita Electric Industrial Co., Ltd. (Matsushita) further teaches a liquid crystal display device with a flexible optical resin sheet (paragraphs 1 and 6). Matsushita teaches forming the resin sheet such that the ratio of glass fibers to resin is such that the sheet stays firm during the manufacturing process, for the benefit of enhancing alignment (paragraph 6). Matsushita teaches general elasticity values of glass fibers and common epoxy resins (paragraphs 3-6). In view of these values, the range of values disclosed would read on the claimed elastic modulus ratio.

Thus, it would have been within the level of ordinary skill to one of skill in the art at the time the invention was made to use the teachings of Sumitomo and Matsushita, as well as what is well known in the art, to make the optical resin sheet such that the ratio of the elastic modulus of the glass fiber to the elastic modulus of the cured resin layer is 25 or more, for the benefit of low average coefficient of linear expansion and high bending strength.

**Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sumitomo Bakelite Co., Ltd. (JP 2003-033991) in view of TAKAHASHI (JP 2005283698 A).**

As to claim 1; Sumitomo Bakelite Co., Ltd. (Sumitomo) discloses an optical resin sheet comprising a cured resin layer containing glass fiber (English translation; paragraphs [009-0010]).

Art Unit: 2874

Sumitomo is silent with respect to the ratio of the elastic modulus of the glass fiber to the elastic modulus of a cured resin material, which forms the cured resin layer, is 25 or more.

Takahashi teaches an optical fiber cable is made of glass fibers that satisfy the conditions, the ratio between the elastic modulus of the glass fibers and the elastic modulus of the matrix resin is  $\geq 22$  (English abstract).

It would have been within the level of ordinary skill to one of skill in the art at the time the invention was made to modify the elastic modulus of the glass fiber and the resin layer to have a ratio of 25 or more to improve bending performance and flexibility of an optical resin sheet.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAJLI PRINCE whose telephone number is (571)270-1280. The examiner can normally be reached on Monday & Wednesday-Friday, 6:00am to 5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on (571) 272-2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2874

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kajli Prince/  
Examiner, Art Unit 2874

/Uyen-Chau N. Le/  
Supervisory Patent Examiner, Art Unit 2874